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Patent Number: JP6252057
Publication date: 1994-09-09
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Requested Patent: ☐ JP6252057
Application Number: JP19930035114 19930224
Priority Number(s):
IPC Classification: H01L21/205; C23C16/44
EC Classification:
EC Classification:
Equivalents:

Abstract

PURPOSE: To form a compound semiconductor film including a group III element of an excellent quality more easily by using an organic metal raw material which comprises a dimer structure and also can reach a substrate surface as it keeps the dimer structure, as the raw material of III-group element.

CONSTITUTION: In the atomic layer epitaxy method, a group III element and a group V element are supplied alternately and a group IV atomic layer and a group V atomic layer are grown individually. In case of a GaAs semiconductor film, a substrate 12 is placed in a reactive furnace 11 and a Ga material container and an As material container 14 are connected to the furnace 11. As the Ga material definitely, an organic Ga compound which has high energy needed for dissolution from dimer to monomer is employed. The Ga material is diluted with a carrier gas and it is supplied to the reactive furnace 11. Also, for example, AsH₃ is used as an As material. As a result, it becomes possible to form a film within a wider range of substrate temperature and such substrate temperature that a film of an excellent quality with few defects can be grown is predetermined.